

What is claimed is:

1. An apparatus for guiding the resection of a bone
5 during arthroplasty, comprising:

(a) anchoring means for anchoring the apparatus to
the bone;

10 (b) a drill guide coupled to said anchoring means;
and

15 (c) alignment means coupled to said anchoring means
and said drill guide for locating said drill
guide relative to the anchoring means, said
alignment means providing three degrees of
freedom.

20 2. An apparatus according to claim 1 wherein said
alignment means is continuously adjustable.

25 3. An apparatus according to claim 1 wherein said
anchoring means is a pin.

4. An apparatus according to claim 1 wherein said
alignment means provides five degrees of freedom.

5. An apparatus according to claim 1 wherein said three degrees of freedom include two rotations and one translation.

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6. An apparatus according to claim 1 wherein said three degrees of freedom include flexion-extension, varus-valgus, and proximal-distal.

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7. An apparatus according to claim 4 wherein said five degrees of freedom include flexion-extension, varus-valgus, proximal-distal, medial-lateral, and anterior-posterior.

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8. An apparatus according to claim 1 wherein said drill guide includes means for attaching a computer navigation tracker.

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9. An apparatus according to claim 1 wherein said drill guide includes a pair of arms having guide holes adapted to guide drilling into the epicondylar region of a femur.

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10. An apparatus according to claim 9 wherein said drill guide includes a T-shaped component and said arms are adapted to be coupled to said T-shaped component.

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11. An apparatus according to claim 9 further comprising a cutting block adapted to be coupled to the holes drilled in the epicondylar region with the drill guide.

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12. An apparatus according to claim 11 wherein said cutting block has five surfaces for making five different cuts on the distal femur.

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13. An apparatus according to claim 11 further comprising a pair of diodes adapted to be mounted in the epicondylar region using the holes drilled with said drill guide, wherein said cutting block is adapted to ride over said diodes.

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14. An apparatus according to claim 1 wherein said drill guide is adapted to guide the drilling of two holes in the distal femur.

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15. An apparatus according to claim 14 further comprising a cutting block having two pins adapted to fit into the holes drilled in the distal femur using the drill guide.

16. An apparatus according to claim 15 wherein said cutting block has four guiding surfaces for making four different cuts on the distal femur.

17. A method of resecting a bone during arthroplasty, said method comprising the steps of:

- (a) anchoring a drill guide to the bone;
- (b) aligning the drill guide relative to the bone in three degrees of freedom;
- (c) locking the drill guide in position; and
- (d) drilling the bone using the drill guide.

18. A method according to claim 17 wherein said step of aligning includes moving the drill guide through a continuously adjustable range.

19. A method according to claim 17 further comprising the steps of:

5 (e) coupling a computer navigation tracker to the drill guide; and

(f) using a computer navigation system to perform the step of aligning.

10 20. A method according to claim 17 wherein said step of anchoring includes pinning to the bone.

15 21. A method according to claim 17 wherein said three degrees of freedom include two rotations and one translation.

20 22. A method according to claim 17 wherein said three degrees of freedom include flexion-extension, varus-valgus, and proximal-distal.

25 23. A method according to claim 17 wherein said step of aligning includes aligning in five degrees of freedom.

24. A method according to claim 23 wherein said five degrees of freedom include flexion-extension, varus-valgus, proximal-distal, medial-lateral, and anterior-posterior.

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25. A method according to claim 17 wherein said step of drilling includes drilling holes in the epicondylar region.

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26. A method according to claim 25 further comprising the step of attaching a cutting block to the epicondylar region.

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27. A method according to claim 26 further comprising the step of making five different cuts of the distal femur using the cutting block.

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28. A method according to claim 17 wherein said step of drilling includes drilling two holes in the distal surface of the femur.

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29. A method according to claim 28 further comprising the step of attaching a cutting block to the distal femur using the two holes drilled therein.

30. A method according to claim 29 further comprising
the step of making four different cuts of the distal
5 femur using the cutting block.

31. An apparatus for guiding the resection of a bone
during arthroplasty, comprising:

- (a) anchoring means for anchoring the apparatus to
the bone;
- (b) a drill guide coupled to said anchoring means;
- (c) alignment means for locating the drill guide
relative to the anchoring means, said alignment
means providing three degrees of freedom; and
- (d) a computer navigation system optically coupled
to the drill guide.

32. An apparatus according to claim 31 wherein said
25 three degrees of freedom are infinitely variable.

33. An apparatus according to claim 31 wherein said
alignment means provides five degrees of freedom.

34. An apparatus according to claim 33 wherein said five
degrees of freedom include flexion-extension,
5 varus-valgus, proximal-distal, medial-lateral, and
anterior-posterior.

35. An apparatus according to claim 31 wherein said
10 anchoring means is a pin.

36. An apparatus according to claim 31 wherein said
three degrees of freedom include flexion-extension,
15 varus-valgus, and proximal-distal.

37. An apparatus according to claim 31 wherein said
three degrees of freedom include two rotations and one
20 translation.

38. An apparatus according to claim 31 wherein said
drill guide includes means for attaching a computer
25 navigation tracker.

39. An apparatus according to claim 31 further comprising a cutting block adapted to be coupled to the distal femur using holes drilled with said drill guide.

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40. An apparatus according to claim 39 wherein said cutting block has four guiding surfaces for making four different cuts in the distal femur.

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41. An apparatus according to claim 39 wherein said cutting block has five guiding surfaces for making five different cuts in the distal femur.

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42. An apparatus for guiding the resection of a bone during arthroplasty, said apparatus comprising a drill guide bushing defining two spaced apart drill guide holes, said drill guide bushing having an orthogonal stem for coupling to an alignment device and a coupling for coupling a tracker to the bushing.

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43. A set of tools for guiding the resection of a bone during arthroplasty, said set of tools comprising:

- 5 (a) a drill guide bushing defining two spaced apart drill guide holes, said drill guide bushing having an orthogonal stem for coupling to an alignment device and a coupling for coupling a tracker to the bushing; and
- 10 (b) an alignment device having at least three degrees of freedom, said alignment device being adapted to couple to said stem and couple to an anchoring device.
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44. A set of tools according to claim 43 wherein said drill guide is adapted to guide the drilling of holes in the distal femur.

20 45. A set of tools according to claim 43 wherein said alignment device has five degrees of freedom.

46. A set of tools according to claim 43 wherein said
drill guide bushing includes a medial drill guide bushing
and a lateral drill guide bushing, said medial drill
5 guide bushing defining two spaced apart holes for
drilling into the medial epicondylar region, and said
lateral drill guide bushing defining two spaced apart
holes for drilling into the lateral epicondylar region.

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